AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) An electric power steering device for controlling the output of a motor that applies an auxiliary steering force to [[the]] a steering mechanism from a current reference value calculated based on at least a steering torque signal generated in a steering shaft, said device comprising:

a duty ratio calculator for calculating a duty ratio D1 and a duty ratio D2 determined by [[the]] a motor terminal voltage based on said current reference value; and

a motor drive circuit including a motor connected across the output terminals and a power supply connected across the input terminals of an H bridge circuit made up of a first arm and a second arm each containing a pair of semiconductor devices connected in series, a PWM signal for a duty ratio D1 driving said semiconductor device in the upper stage of said first arm, and a PWM signal for a duty ratio D2 driving said semiconductor device in the lower stage of said second arm of said H bridge circuit,

wherein said duty ratio calculator calculates said duty ratio D1 and said duty ratio D2 having a continuous characteristics between the motor current and a duty ratio D from said current reference value based on a specified calculation formula.

2. (Currently Amended) An electric power steering device according to claim 1, wherein said duty ratio calculator calculates said duty ratio D1 and said duty ratio D2 separately based on the back electromotive force of said motor to have a continuous characteristics between the motor current and the duty ratio D.

3. (Currently Amended) An electric power steering device for controlling the output of a motor that applies an auxiliary steering force to [[the]] a steering mechanism from

a current reference value calculated based on at least a steering torque signal generated in a steering shaft, said device comprising:

a duty ratio calculator for calculating a duty ratio D1 and a duty ratio D2 determined by [[the]] a motor terminal voltage based on said current reference value; and

a motor drive circuit including a motor connected across the output terminals and a power supply connected across the input terminals of an H bridge circuit made up of a first arm and a second arm each containing a pair of semiconductor devices connected in series, a PWM signal for duty ratio D1 driving said semiconductor device in the upper stage of said first arm, and a PWM signal for a duty ratio D2 driving said semiconductor device in the lower stage of said second arm of said H bridge circuit,

wherein, when the following condition (c) is satisfied for the absolute voltage of the motor terminal voltage command value V_{ref} and the absolute value of the motor back electromotive force $K_T\omega$,:

$$|V_{ref}| < |K_T\omega| \text{ ..... (c)}$$

then said duty ratio calculator calculates said duty ratio D1 from the following formula (a), and said duty ratio D2 from the following formula (b):

$$D1 = V_{ref2}/Vr \text{ ..... (a)}$$

$$D2 = \{V_{ref2} + \text{sign}\ (V_{ref2})\ (Vr - |K_T\omega|)\}/Vr \text{ ..... (b)}$$

Here, V_{ref}: motor terminal voltage command value

V_{ref2}: linear motor terminal voltage command value

$= 1/2\ (V_{ref} - K_T\omega)$

Vr: Voltage supplied to H bridge (battery voltage)

K_T: = Motor back electromotive force constant

ω: Motor angular velocity

sign(V_{ref2}): reference symbol for linear motor terminal voltage command value V_{ref2}.

4. (Previously Presented) An electric power steering device according to claim 3, wherein the following condition

$$|V_{ref}| < |K_T\omega| \text{ ..... (d)}$$

is satisfied for the absolute value of said motor terminal voltage command value V_{ref} and the absolute value of said motor back electromotive force $K_T\omega$ after filtering out their respective noise components, then said duty ratio calculator can calculate said duty ratio D1 from said formula (a), and said duty ratio D2 from said formula (b).

5. (Previously Presented) An electric power steering device according to claim 3, wherein following condition

$(|V_{ref}| - |K_T\omega|) < -Hys$ ..... (f)

(Hys: hysteresis width characteristics value)

is satisfied for the absolute value of said motor terminal voltage command value V_{ref} and absolute value of said motor back electromotive force $K_T\omega$, then said duty ratio calculator can calculate said duty ratio D1 from formula (a), and said duty ratio D2 from formula (b); and the previous decision results can be maintained when the following condition

$-Hys < (|V_{ref}| - |K_T\omega|) < Hys$ ..... (g)

is satisfied.

6. (Currently Amended) An electric power steering device according to claim 5, wherein noise components are ~~filtering~~ filtered out from at least either one of said motor terminal voltage command value V_{ref} or said motor back electromotive force $K_T\omega$.

7. (Previously Presented) An electric power steering device according to claim 5, wherein said hysteresis width characteristic value Hys is determined according to the level of the noise.

8. (Original) An electric power steering device according to any of claim 3 through claim 6, wherein said duty ratio calculator includes a current drive linearity compensator and a current discontinuity compensator, and said current drive linearity compensator calculates said duty ratio D1 for said linear motor terminal voltage command value V_{ref2} from the input of said motor terminal voltage command value V_{ref} based on said

formula (a); and said current discontinuity compensator calculates said duty ratio D2 from the input of said linear motor terminal voltage command value V_{ref2} based on said formula (b).